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CASE REPORT

Hyperextension Injury Causing Abdominal Aortic Rupture

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Introduction

Blunt abdominal aortic injury is a rare event. Less than 50 cases have been reported in the English literature. This is the first case reported where the mechanism of injury is hyperextension.

Case Report

A 21-year-old male presented to our hospital following a water skiing accident. He was travelling at approximately 70 km/h when he fell forward, head first into the water. He recalled hyperextension of the back, with his feet touching his head. He was transferred to hospital with a presumed spinal injury. He complained of severe lower back pain and numbness of the left anterior thigh. He had no significant past medical illness or family history. Initial examination revealed a pulse rate of 88 and blood pressure of 90/50 mmHg. The abdomen was markedly distended with right upper quadrant tenderness and guarding. Bowel sounds were present. The lower lumbar spine was tender. There was sensory loss in the left thigh anteriorly with reduced power in the left quadriceps muscle. Limb pulse were intact.

X-rays demonstrated an avulsion of the posterior border of the second lumbar vertebral body. The vertebral alignment was normal. A helical CT scan of the abdomen revealed a large retroperitoneal haematoma with contrast extravasation from the aorta below the renal vessels (Fig. 1).

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An urgent laparotomy was performed. A large retroperitoneal haematoma was found. Heparin was administered and the aorta clamped below the renal arteries. There was a 3 mm tear of the left posterolateral wall of the aorta at the origin of an avulsed lumbar artery. No associated injury was demonstrated. The aorta was repaired primarily with interrupted 4/0 polypropylene sutures and the lumbar artery was ligated. Blood transfusion of 7 units was required.

His postoperative course was uncomplicated. Magnetic resonance imaging was performed to evaluate the spinal injury. There was a small posterior tear-drop fracture of the second vertebral body, with oedema of the interspinous ligaments and no compressive lesion. The patient was mobilised and had gradual resolution of the neurological impairment. Forty days post injury

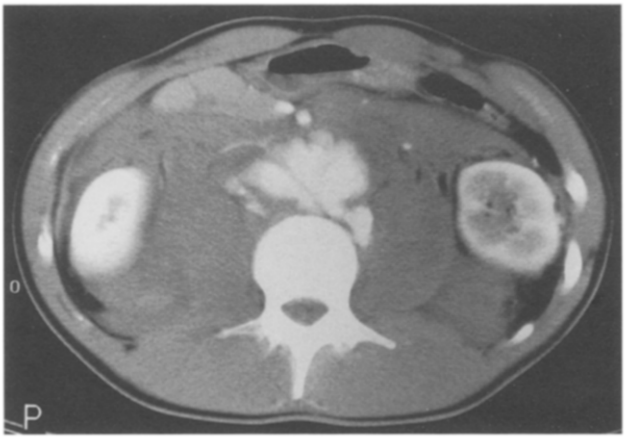

Fig. 1. CT scan with intravenous contrast demonstrating gross extravasation of contrast from the infrarenal aorta.

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he was well with no neurological impairment apart from retrograde ejaculation.

Discussion

Rupture of the abdominal aorta due to blunt trauma is uncommon. Killen[1] reported one patient with abdominal aortic injury amongst 1320 blunt trauma victims. Of 8710 autopsies on trauma cases Parmley *et al.*[2] and Strassman[3] reported 16 cases of blunt abdominal aortic injury, compared with 331 cases of blunt thoracic aortic injury. This injury comprises 0.05% of blunt trauma cases in the Maryland Institute Medical Services Trauma Registry.[4] On review of 41 reported cases Lassonde and Lauredeau[5] and Frydenberg *et al.*[6] found that 78% of cases occurred as a result of motor vehicle accidents. Other mechanisms include falls, crush injuries and a direct blow from a football.[7]

There has been no previously reported case of hyperextension causing this injury. There is one case of lumbar artery avulsion occurring following a crush injury.[8] Lock *et al.*[8] found associated lumbosacral spine injury in four of 33 cases. The mechanism of injury in this case is almost certainly due to avulsion of the lumbar artery as a primary event, rather than laceration from the vertebral fracture. It is possible that this has occurred in other cases but not been detected due to the severity of other injuries or poor recollection of the mechanism of injury by the patient.

References

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